
You will not get any points if your answer is wrong, that is no points to your explanations if your answer is wrong. And of course no points to a correct answer if your explanation or proof is not correct or clear.

YOU must write GOOD Mathematics

1. Let T be an invertible linear operator on a finite dimensional vector space V and let λ be an eigenvalue of T . Prove that λ^{-1} is an eigenvalue of T^{-1} .

Solution:

2. For

$$A = \begin{pmatrix} 4 & 4 & 4 \\ -2 & -2 & -5 \\ 1 & 2 & 5 \end{pmatrix}, \quad x_1 = \begin{pmatrix} 2 \\ -1 \\ 0 \end{pmatrix}, \quad \text{and} \quad x_2 = \begin{pmatrix} -1 \\ 2 \\ -1 \end{pmatrix}$$

show that the subspace W spanned by $\mathcal{B} = \{x_1, x_2\}$ is an invariant subspace under A .

Solution: